

REMARKS

Claims 1-9, 13-21 and 25-28 are pending. By this Amendment, claims 1 and 13 are amended. This Amendment is supported by Fig. 2 of the specification, for example. No new matter is introduced.

The Office Action rejects claims 1, 5, 9, 13, 17, 21, 25 and 27 under 35 U.S.C. §103 over Clark et al. (U.S. Patent No. 5,913,691) in view of Olarig et al. (U.S. Patent No. 6,587,909); claims 2, 6, 14 and 18 under 35 U.S.C. §103 over Clark and Olarig and further in view of Heberlein et al. (U.S. Patent No. 6,361,356); claims 3, 7, 15, 19, 26 and 28 under 35 U.S.C. §103 over Clark and Olarig and further in view of Saitoh et al. (U.S. Patent No. 5,274,722); and claims 4, 8, 16 and 20 under 35 U.S.C. §103 over Clark, Olarig and Heberlein and further in view of Saitoh. These rejections are respectfully traversed.

The Office Action asserts in the Response to Arguments that Clark's invention should be modified with Olarig's invention so that disconnection of high-voltage external equipment in Clark's invention can be "done as safely as possible." Further, the Office Action asserts that Clark's invention makes an electrical connection only after it is fully mechanically connected but without use of the attaching means and thus concludes that in Clark's invention the connectors could still be pulled apart by hand even though high voltage current is passing through the connector. The Office Action concludes that this would be the motivation to modify Clark with Olarig in which the electrical connection is made only after connectors are fully mechanically connected and secured by the attaching means and not be pulled apart. However, the Office Action's assertions are not consistent with Clark's disclosure.

In Clark, a control circuit 70 is provided to ensure the power supply is switched on only while the power connections are in full physical contact. See C6/L7-8. As shown in Fig. 9, the control circuit 70 is a switch having control leads 72 and 74. The control circuit 70 is physically offset so that electrical connection or disconnection of the power supply is made

only after the power circuit is fully mechanically connected or disconnected, respectively.
See C5/L51-55 and 62-66.

Thus, in Clark, even if the electrical connection is made but prior to cam lever means 44 being latched and the connectors are then pulled apart, control circuit 70 would have de-energized the electrical connection before any of the conductors may be touched by a hand, for example. Accordingly, there is no instance in Clark where power may be supplied to the connectors and the connectors may be touched by a hand and thus cause a safety failure.

In view of the above, there is no need for any additional safety precautions especially to add a computer involvement in the power connection/disconnection when connecting or disconnecting Clark's connector.

Even aside from the above inconsistency of the Office Action's assertions, the combination of Olarig with Clark is not simply arranging old elements with each performing the same function it had been known to perform and yielding no more than one would expect from such an arrangement. For example, Olarig is directed to computer memory modules having a connector that prevents touching of the pins after the connector is inserted. Further, Olarig connects in the electrical signal attached to a well-known lever that locks the memory unit to the connector so that the memory unit cannot be removed. There are no such corresponding parts in Clark.

For example, in Clark, connection of the high voltage connectors and the locking lever must move simultaneously. The movement of the lever is in fact locked to the movement of the connectors. Thus, there is uncertainty and unpredictability with modifying Clark with Olarig. As stated by the Supreme Court in *KSR*, in more difficult cases involving more than simple substitution of one known element for another or where a mere application of a known technique of a piece of prior art ready for the improvement, the court must determine whether

there was an apparent reason to combine the known elements in the fashion claimed by the patent at issue and this analysis should be made explicit. See 127 S.Ct. 1727, 1740-1741. Here, there appears to be no apparent reason for combining Olarig with Clark. The reason provided in Olarig is to prevent rebooting of the CPU when memory modules are removed without first disabling the memory unit. Clark is directed to altogether a different problem of mating a high voltage connector in such a way as to prevent corrosion of the connector terminals and providing a structure that avoids harm to the connector.

Further, as discussed above, Clark has already provided for multiple schemes to prevent a safety failure such as interlocking cam levers, enclosing conductors with insulators and mating the insulators long before power is energized into the conductors of the connectors, etc. As also stated in earlier responses, Clark does not disclose a CPU problem with disconnecting high voltages. In fact, high voltages are not interrelated to functions of the CPU so that connection and disconnection would not cause the reboot problem addressed in Olarig. Thus, there is no reason for one of ordinary skill in the art to combine Olarig with Clark, as required by the Supreme Court in *KSR*.

The Office Action goes on to assert that implementing Olarig's method of mechanical and electrical connection of a connector improves the reliability or safety of Clark's connector. As already discussed above, there can be no further improvement in safety because Clark has already provided these safety measures. There is no way in Clark where a person operating Clark's connector can come in contact with any high voltages. The high voltage conductors are insulated well before power is energized to the conductors and de-energized well before the conductors are exposed.

The Office Action asserts that "the only teaching from Olarig applied to Clark is 'when the state of the electrical connection between the main device and a piece of external equipment changes'." However, the Office Action does not provide explicit analysis of

exactly how such an application can be made. It appears that the Office Action assumes that one of ordinary skill in the art would make random applications of ideas without consideration of unpredictabilities and provide reasons for combinations such as insisted upon by the Supreme Court.

In view of the above, with no reasons for such a combination and the unpredictabilities that may be introduced by attempting such a combination, Applicants respectfully submit that the subject matter recited in claims 1 and 13 would not have been obvious from Clark in view of Olarig.

In addition to the above, there is no part in the Office Action assertions that addresses the actual language of claims 1 and 13. In particular, the Office Action does not address the limitation "a CPU controlling the interlock control circuit to change a state of a high voltage supply to set connection means ... in response to detachment of said attaching means and prior to any movement of the connection means," as recited in claims 1 and 13. As shown in Fig. 6 of Clark, the cam lever 44 includes a slot 39 that engages with pin 35. Thus, any movement of cam 44 will automatically cause movement of the connector via pin 35. However, the power control circuit 70 does not de-energize the connector until female and male connector members 12 and 14 are moved to be separated. Thus, Clark does not disclose or suggest the subject matter recited in claims 1 and 13.

It may be asserted that if Olarig was combined with Clark, power may be de-energized and energized based on movement of lever 44 at its completely locked position so that upon movement of the lever without movement of the connector power would be de-energized. However, such a design would never be made because the connector would be energized and de-energized based on small vibrations that are common in vehicles. Such a combination would render Clark's connector inoperable.

If one was to attempt to combine Olarig and Clark, the most likely combination would be to connect a signal to power control circuit 70 so that instead of de-energizing the power circuit, a signal would be generated to a CPU that would then in turn de-energize the power circuit. However, as discussed earlier, this adds a large amount of complexity to perform the exact same function as the power circuit 70 would have performed. Thus, one of ordinary skill in the art would not have made this modification to increase costs for no additional benefit.

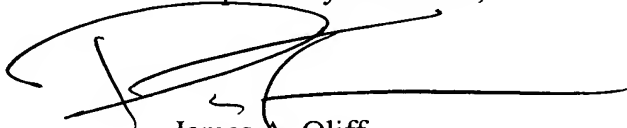
Still further, the Office Action asserts that Clark's cam lever and locking means correspond to the attaching means/unit recited in claims 1 and 13. However, Clark's cam lever and locking means are attached to a housing for pin receptacles 26 of female connector member 12. The housing does not hold high-voltage equipment that includes any active devices. Thus, the asserted attaching means is attached to a passive connector element, and Clark does not disclose or suggest an attaching means that is attached to a body of the housing that holds high-voltage equipment that includes any active devices, as recited in claims 1 and 13. Accordingly, Clark does not disclose or suggest the subject matter recited in claims 1 and 13.

As discussed in prior responses, none of the other applied art supplied the subject matter lacking in Clark and Olarig. Thus, Clark, Olarig, Heberlein and Saitoh individually or in combination would not have rendered obvious the subject matter recited in claims 1 and 13. Claims 2-9 ultimately depend from claim 1 and claims 14-21 and 25-28 ultimately depend from claim 13. Thus, Clark, Olarig, Heberlein and Saitoh individually or in combination would not have rendered obvious the subject matter recited in claims 1-9, 13-21 and 25-28. Withdrawal of the rejections of claims 1-9, 13-21 and 25-28 under 35 U.S.C. §103 is respectfully solicited.

In view of the foregoing, it is respectfully submitted that this application is in condition for allowance. Favorable reconsideration and prompt allowance of claims 1-9, 13-21 and 25-28 are earnestly solicited.

Should the Examiner believe that anything further would be desirable in order to place this application in even better condition for allowance, the Examiner is invited to contact Applicants' undersigned representative at the telephone number listed below.

Respectfully submitted,



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Date: February 28, 2008

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